1uMN = 14ugN/l; 1uMP = 31ugP/l

Samples were incubated for 4 days. Both chlorophyll a concentrations and cumulative $^{14}CO_2$ incorporation were monitored at daily intervals. Chlorophyll a concentrations were measured on 300 ml samples, filtered onto 934 AH Whatman glass fiber filters with a few ml of a $MgCO_3$ suspension added to buffer against chlorophyll a degradation by any organic acids released by cell lysis during filtration. Assimilation of $^{14}CO_2$ was measured on 50 ml subsamples filtered through 934 AH Whatman glass fiber filters. Filters were fumed with HCl vapors for 30 minutes to remove abiotically precipitated ^{14}C, dried, and ^{14}C content determined in a liquid scintillation counter (Beckman TD 5000 and LS 7000). To facilate the display of the bioassay data set (Fig. 8 and 9), biomass stimulation, as estimated by chlorophyll a minus control, and primary productivity stimulation, as estimated by ^{14}C assimilation minus control, were averaged for each treatment over the 4 days of the experiment. Pooled sample standard error of the means were calculated and averaged over the 4 days of the experiment as well.

In addition to the above-mentioned activities, this project has benefited from the following, related activities contemporaneously undertaken in our laboratory: 1) Parallel (in time and space) in situ determinations of primary productivity (supported by U. N. C. Sea Grant project RMER-10). 2) Periodic in situ bioassay determinations of nutrient limitation in N. C. Atlantic coastal waters (2 km offshore from Beaufort Inlet) including samples in 1987-1988 dominated by the "red tide" dinoflagellate Ptychodiscus